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KEYS TO SOME INDIAN GENERA OF CARABIDAE (COL.). IX. THE GENERA *PERICALUS* AND *CATASCOPUS*

By H. E. Andrewes, F.R.E.S.

Numerous species of the genus *Pericalus* are found in the Malay Archipelago, but only two have hitherto been described from the Indian region, and two new ones are added here.

The genus *Catascopus* is also well represented in the Malay Archipelago, but no less than twenty species, including two new ones described below, are met with in the Indian region, where they are found under the loose bark of trees. Two changes will be noted in the subjoined key. (i) *C. cyanellus* Chaud. (1848) and *C. reductus* Walk. (1858) present no material structural differences, and the latter is treated here as a colour variety of the former. (ii) *C. salvazae* Andr., on the other hand, which was described as a colour variety of *C. punctipennis* Saund., is here regarded, owing to the unevenness of the surface of the elytra and the greater depth of the striae, especially towards the apex, as a distinct species. The descriptions of the new species will be found following the keys.

Pericalus.

Key to the species.

1(2). Head very finely striate, neck constricted; prothorax much narrower than head, only a fifth wider than long, the sides narrowly reflexed; elytra black, without pattern, 4 dorsal pores. Length about 9 mm. (Nilgiri and Anamalai Hills) . . . . . *fascinator* sp. n.

2(1). Head coarsely striate, neck unconstricted; prothorax barely narrower than head, fully a half wider than long, the sides widely reflexed; elytra black, with a pale pattern. Length seldom under 10 mm.

3(6). Elytra with a pale rounded spot or band in front, 3 dorsal pores.

4(5). Elytra with a pale rounded spot in front, outer angle of truncature usually very sharp; legs and antennae black or piceous (N.E. India, Burma, Siam, Indo-China) . . . . . *ornatus* Schm.-Goeb.

5(4). Elytra with a pale band in front, outer angle of truncature obtuse; legs and antennae pale reddish-brown (Assam, Burma, Andaman Is.) *distinctus* Dupuis

6(3). Elytra with a pale, irregular fascia in front, outer angle of truncature usually rounded, 4 dorsal pores (Assam, Burma) . . . . *amplus* sp. n.

Pericalus fascinator sp. n.

Length, 8·5–9 mm. Width, 3·1–3·3 mm.

Black: palpi ferruginous at base and apex, segments 5 to 11 of antennae brown; head and prothorax dark aeneous, elytra dull, with vague metallic reflections; femora rather pale ferruginous, tibiae and tarsi mainly piceous.

Head wide, neck constricted, very finely and mainly longitudinally striate, a little more deeply at sides, eyes large, hemispherical, antennae slender, reaching basal third of elytra. *Prothorax* subquadrate, about three-fourths the width of head, a fifth wider than long, base truncate, bordered, front angles projecting a little forward, sides (presumably) bisetose (the setae abraded), bordered, gently rounded in front, sinuate at a third from base, hind angles right, sharp, and projecting slightly both outwards and backwards; median line fine, front transverse impression obsolete, hind one very deep, ending on each side in a

short impressed line, directed at a right angle towards base, surface faintly transversely striate. *Elytra* moderately convex, ovate, though with evident shoulders, not quite twice as wide as prothorax, a half longer than wide, apex truncate, emarginate on each side and with the outer angle produced into a sharp tooth; striae shallow on disk, fairly deep towards apex, vaguely crenulate, 7 continued to apex and bounding all the inner striae, intervals rather flat on disk, convex behind, especially 5 to 8, 3 with four pores, two towards base, one behind middle, and one close to apex (in the type the three front ones are placed at a fifth, a half, and two-thirds, with an extra pore on the left elytron at about a third). Microsculpture isodiametric and conspicuous on the elytra, vague elsewhere. Underside smooth and shiny; prosternal process setulose; last ventral segment ♀ with two setae on each side.

Madras: Nilgiri Hills (*H. L. Andrewes*), 1 ex. ♀ (type); Anamalai Hills (*T. B. Fletcher*), 1 ex. ♀, found in a rotten log. The type is in my collection.

Pericalus distinctus Dupuis.

In 1883 (*Ann. Soc. ent. Belg.*, **57** : 82–3) Dupuis published some notes on the genus *Pericalus*, and described two new species, *P. distinctus* and *P. formosanus*. To the description of the latter he devoted about five pages, to that of the former some three or four lines. I have to thank the Director of the Nat. Hist. Mus. at Brussels and Mr. A. Ball for their courtesy in sending me the type of *P. distinctus*, of which I give below some further account. The specimen is marked " type," but has also a label " Patria ? " : Dupuis says, however, that he has other examples from the Andaman Is. and Burma. From the few words of description it might be inferred that the pattern on the elytra was similar to that of *P. ornatus* Schm.-Goeb., which is not the case, though, as the author says, the legs (and I may add the antennae) are pale reddish-brown, and the outer angle of the elytral truncature is obtuse. Structurally, and in general coloration, the two species are very much alike, the main difference being in the form of the pale front marking on the elytra : in *ornatus* this consists of a fairly large, rounded spot on each elytron, whereas in *distinctus* this is replaced by a transverse band, covering intervals 3 to 6, and sloping slightly backward on each side, the colour on 3–4 being a little in advance of that on 5–6. The hind fascia hardly differs, and, as in *ornatus*, there are three dorsal pores. In *ornatus* the outer angle of the elytral truncature is usually very sharp, but in some specimens it is obtuse, as in *distinctus*. Although in the key *distinctus* has been treated as a species, it may prove to be no more than a variety of *ornatus*.

There is in the British Museum an example from Mungphu in Sikkim (Atkinson coll.) which agrees in the main with the type of *distinctus*, but it is a very poor specimen, and it differs in having the front elytral fascia much reduced, while the hind one is formed by larger patches.

Pericalus amplus sp. n.

Length, 9–10·5 mm. Width, 4–4·5 mm.

Black, shiny : palpi ferruginous, antennae and legs more or less piceous, elytra with two irregular flavous fasciae, the front one on intervals 3 to 7, the pale colour extending farthest forward on 5, and farthest back on 4 and 6, the hind one formed chiefly by small detached patches on intervals 2 to 8, that on 6 farthest forward, then patches adjoining each other on 4 and 5, on 8 and 9, and on 2 and 3, the last nearest apex.

Head wide, densely longitudinally striate, neck smooth, eyes hemispherical, antennae slender, reaching basal fifth of elytra. *Prothorax* cordate, barely as wide as head, nearly

two-thirds wider than long, base truncate, bordered, front angles rounded, sides bisetose, unbordered, somewhat explanate and moderately reflexed, rounded in front, sinuate at a third from base, hind angles right, sharp, and projecting a little laterally; median line deep on disk, transverse impressions deep, curving round sharply to the front and hind margins respectively, surface transversely striate on disk, uneven along sides. *Elytra* convex, ovate, but with very square shoulders, not quite twice as wide as prothorax, barely a third longer than wide, apex truncate, fairly deeply emarginate on each side, the outer angle rounded or bluntly toothed, the inner one sharp; striae deep, very vaguely crenulate, intervals convex, the outer narrower than the inner ones, 3 with four pores, near base, at a third, at two-thirds, and close to apex; the sides compressed at about a third and the marginal channel widening out at middle. Microsculpture of the elytra formed by moderately wide meshes; on the head and prothorax the meshes are inconspicuous. Underside smooth and shiny; prosternal process setulose; last ventral segment (♂♀) with two setae on each side.

Slightly smaller than *P. guttatus* Chevr., but similar in form, the elytra black, instead of blue-black. Head more finely and densely striate; prothorax rather wider and with the front angles more rounded; the front fascia on the elytra formed by spots which to some extent adjoin each other, not by detached spots as in *guttatus*, the outer angle of the apical truncature not so sharply pointed, interval 3 with four pores instead of three.

Assam: Lakhimpur, Upper Dihing (*C. F. C. Beeson*), 3 ex.; Rotung, 1,400 feet, and Kobo, 400 feet (*S. W. Kemp*, Abor Expedition). Burma: Ruby Mines (*Doherty*), 5,000–7,000 feet, 8 ex. Type in my collection; cotypes in the British Museum, the Indian Museum, Calcutta, and the Forest Research Institute, Dehra Dun. Dr. Beeson's three specimens are brown and immature. The specimens of the Abor Expedition were found under bark and in rotten wood.

Catascopus.

Key to the species.

1(30). Outer angles of the apical truncature of the elytra either spiniform, dentate, or at least evidently angulate. Large species (except *smaragdulus*) rarely under 10 mm. in length.

2 (9). Outer angles of the apical truncature of the elytra spiniform.

3 (6). Both outer and inner angles of the elytral truncature furnished with a long, narrow spine.

4 (5). Neck deeply constricted; elytral interval 3 raised at base, but otherwise resembling the adjoining intervals; colour dark blue, the elytra with a violet tinge. Length, 17 mm. (N. Kanara, Nilgiri Hills) . . . . . *bellus* Andr.

5 (4). Neck unconstricted; elytral interval 3 subcarinate; head green, prothorax cupreous, elytra violet. Length, 16 mm. (N.E. India, Burma, Indo-China) . . . . . *regalis* Schm.-Goeb.

6 (3). Outer angles of the elytral truncature each furnished with a short, wide spine; inner angles each with two adjacent teeth.

7 (8). Inner angles of the elytral truncature each with two fairly long sharp teeth; surface of the prothorax irregularly longitudinally rugose, that of the elytra broken up into short, irregular, longitudinal carinae; colour black. Length about 17·5 mm. (N.E. India, N. Burma, Indo-China, Formosa) . . . . . *mirabilis* Bates.

8 (7). Inner angles of the elytral truncature each with two short teeth; surface of the prothorax finely transversely striate, that of the elytra subcarinate on the basal half of intervals 3, 5, and 7; colour blue or violet. Length about 19·5 mm. (Assam, N. Burma)
illustris sp. n.

9 (2). Outer angles of the apical tuncature of the elytra dentate or angulate.
10(29). Neck not evidently constricted behind vertex, though sometimes constricted at sides.
11(20). Head with a single carina on each side between eye and vertex.
12(17). Elytral interval 5 costate or carinate, at least on basal half, the puncturation of the outer striae coarse and conspicuous.
13(16). Head usually striate at sides of front; elytral interval 5 costate on basal half, interval 3 with three pores. Length about 13 mm.
14(15). Colour of upper surface blue (N. India, Burma) . . . . *facialis* Wied.
15(14). Colour of the disk of the elytra blue, head, prothorax, base and apex of elytra, with intervals 8 and 9 metallic green (N.E. India, Burma, Indo-China, Malay region). . . . *facialis* Wied. var. *basalis* Chaud.
16(13). Head without striation at sides of front; elytral interval 5 carinate on basal half, interval 3 with five pores; colour violet blue. Length about 20 mm. (" Nepal," India, Ceylon) . . . . *whithilli* Hope.
17(12). Elytral interval 5 not costate or carinate, even on basal half, the puncturation of the striae rather fine throughout.
18(19). Head punctate, with some fine striae on each side between frontal fovea and eye; elytral interval 5 a little raised at a third from base, colour greenish blue. Length, 12·5 mm. (Andaman and Nicobar Is.) . . . . . *andamanensis* Chaud.
19(18). Head impunctate, not striate at sides, but with a short ridge on each side, not extending beyond mid-eye level, bounding the frontal foveae externally; elytral interval 5 not raised, colour aeneous green, intervals 7 to 9 cupreous. Length, 7 mm. (N.E. India, Indo-China, Malay region) . . . . . *smaragdulus* Dej.
20(11). Head with at least two carinae on each side between eye and vertex.
21(26). Head very finely punctate; elytral intervals 7 and 8 carinate on the basal half along the inner margin, intervals 1 to 6 at most moderately convex.
22(23). Elytral striae lightly impressed on disk, where the intervals are only slightly convex, 5 not narrower on the basal half than the adjoining intervals, colour dark metallic green, disk of elytra dark blue. Length about 10·5 mm. (South India) . . . . . *lissonotus* Andr.
23(22). Elytral striae clearly impressed on disk, where the intervals are moderately convex, 5 evidently narrower on the basal half than the adjoining intervals.
24(25). Colour blue. Length about 9·5 mm. (" Nepal," India) . *cyanellus* Chaud.
25(24). Colour brassy green. Length, 10 mm. (Ceylon) *cyanellus* Chaud. var. *reductus* Walk.
26(21). Head at least moderately punctate; elytral interval 7, but not 8, somewhat carinate along the inner margin, intervals 1 to 6 strongly convex. Length about 10 mm.
27(28). Head coarsely punctate across vertex; elytral striae moderately deep on disk, no deeper at apex; colour of head and prothorax green, elytra violet (N.E. India, Burma, Malay States) . . *violaceus* Schm.-Goeb.
28(27). Head moderately punctate across vertex; elytral striae deep on disk, very deep at apex; colour aeneous, disk of elytra up to stria 6 and the marginal channel blue-black (N. Burma, Indo-China) *salvazae* Andr.
29(10). Neck evidently constricted behind vertex, head with a single carina on each side, though striate at sides of front, elytra with interval 5 costate, interval 7 carinate, 3 dorsal pores, apex biemarginate, the outer angles of the truncature evident though obtuse; colour blue, though sometimes with greenish or violet reflections. Length about 13 mm. (India, Ceylon) . . . . . *cingalensis* Bates.

30 (1). Outer angles of the apical truncature of the elytra rounded. Small species not exceeding 10 mm. in length.
31(40). Head with two carinae on each side; prothorax with its base hardly narrower than apex.
32(39). Head evidently punctate; elytra with interval 5 more or less raised, interval 7 carinate along the inner margin.
33(36). Prothorax with its sides strongly sinuate before base, the hind angles projecting laterally; elytra rather deeply depressed at basal third, cupreous.
34(35). Head and prothorax aeneous or green (Burma, Andaman Is., Indo-China, Malay region) . . . . . *fuscoaeneus* Chaud.
35(34). Head and prothorax cupreous (Andaman Is.) *fuscoaeneus* Chaud. var. *cupreicollis* Waterh.
36(33). Prothorax with its sides moderately sinuate before base, the hind angles not or barely projecting laterally; elytra lightly depressed at basal third.
37(38). Elytral interval 8 not carinate along inner margin, outer striae and their punctures only moderately deep, colour aeneous, green, or blue (N. India, Burma, Indo-China, Malay region, N. Australasia) *elegans* Weber
38(37). Elytral interval 8 carinate along inner margin, outer striae and their punctures deep, colour aeneous or dark greenish blue, intervals 7 to 9 golden green or cupreous (N.E. India, Burma, Andaman Is.) *elegans* Weber var. *scintillans* Bates.
39(32). Head very finely rugose, with a few microscopical punctures; elytral intervals 4 and 5 subcarinate at middle along outer margin, 7 and 8 carinate along inner margin; head and prothorax blue, elytra nearly black on disk, intervals 5 to 9 aeneous (N. India) . . *hardwicki* Kirby.
40(31). Head punctate, with a single carina on each side; prothorax strongly contracted behind, so that the base is evidently narrower than the apex; colour blue, elytral intervals 8 and 9 cupreous. Length, 11 mm. (Assam) . . . . . *jenkinsi* sp. n.

Catascopus illustris sp. n.

Length, 19–21 mm. Width, 6–6·5 mm.

Bright blue : buccal organs and segments 5 to 11 of the antennae more or less piceous; basal half of the elytra with greenish reflections, apical half with a vague, purplish patch on the disk.

Head wide, clypeus emarginate, neck somewhat constricted at sides, frontal foveae short, deep, parallel, eyes large and prominent, a single carina on each side between them and vertex, sides and front finely striate, vertex fairly closely and rather irregularly punctate, submentum with a row of long setae. *Prothorax* convex, cordate, hardly wider than head and only a little wider than long, base and apex about equal in width, both bordered and widely emarginate, sides bisetose, bordered, well rounded in front, sinuate at a third from base, hind angles acute, though not very sharp, projecting laterally; all the normal impressions deep, especially on the basal half, surface very distinctly transversely striate. *Elytra* convex, subquadrate, a half wider than prothorax, two-thirds longer than wide, sides slightly sinuate behind shoulder, apex truncate, outer angles of the truncature spiniform, the spines short and wide, inner angles each with two short adjacent teeth, opposite the two inner intervals respectively; striae deep, very finely punctate, intervals convex, 3, 4, 5, and 7 more or less carinate on the basal half, but only the carina on 5 extends as far as middle, 6 somewhat costate on the basal, and 4 on the apical half, interval 3 with three dorsal pores, surface deeply depressed at basal fourth on intervals 1 to 4,

especially on 3 and 4. Microsculpture of the head and elytra isodiametric, the meshes on the head very fine; on the prothorax the meshes are also very fine, but transverse. Sterna with a fairly long and close pubescence; venter minutely and sparsely punctate and pubescent, apical segment bordered, ♂ faintly emarginate at middle and with a single seta on each side, ♀ a little more deeply emarginate and with two setae on each side.

N. Burma: Kachin Hills, Mali Hka Valley, 1,000–2,500 feet, 1 ex. ♂, and Nam Tamai, 4,000 feet, 1 ex. ♀ "in dry dead timber" (both *F. Kingdon Ward*). Assam: Renging, 2,150 feet (*S. W. Kemp*), 1 ex. ♂ in "rotten wood" (Indian Museum, Abor Expedition). The type is in the British Museum.

The two Burmese specimens measure 19 × 6 mm., the Assam example 21 × 6·5 mm.

Catascopus jenkinsi sp. n.

Length, 11 mm. Width, 3·1 mm.

Black: upper surface blue, prothorax with faint greenish reflections, elytral intervals 8 and 9 cupreous.

Head large and wide, clypeus emarginate, neck moderately constricted, frontal foveae not very deep, irregularly striate, eyes large and prominent, a single fine carina on each side between them and vertex, surface punctate, very finely and sparsely on front, more strongly and closely behind. *Prothorax* small, convex, cordate, slightly narrower than head, about two-thirds wider than long, strongly contracted behind, so that the base is narrower than the apex, sides bisetose, bordered, well rounded in front, sinuate at a fifth from base, hind angles sharp, a little acute, and projecting slightly laterally; median line, hind transverse impression, and basal foveae all deep, surface faintly transversely striate. *Elytra* convex, three-fifths wider than prothorax, two-fifths longer than wide, shoulders very square, sides gently rounded, slightly sinuate behind shoulder, apex truncate, both outer and inner angles of the truncature rounded; striae moderately deep and very clearly punctate, shallower near apex, intervals moderately convex, 5 slightly raised and a little narrower than the adjoining intervals, 7 narrow and costate, 3 with three pores, no superficial depressions. Microsculpture of the head and elytra isodiametric, the meshes on the head very fine; on the prothorax the meshes are faint, but transverse. Underside impunctate, glabrous; apical ventral segment (♀) with two marginal setae on each side.

Assam (*Jenkins*), 1 ex. ♀, in the Hope Dept. of the Oxford University Museum.

Book Notice.

The Origin of Higher Categories in Cynips. By A. C. Kinsey. Bloomington, Indiana, Indiana University Bookstore. pp. 334, 172 figs. (Indiana Univ. Publ. (Sci.) **4**, 1936). Price $2·50.

This work is a systematic study of the genus *Cynips*, in which 70 new species are described, most of them from Mexico. It is divided into Part I, Evolutionary discussion, Part II, Systematic data, and the Appendices.

In the words of the Summary, "Higher Categories may best be defined as arbitrarily limited groups of related species in a phylogenetic chain."

The book aims to cover all that is yet known of the Mexican and Guatemalan faunas of the genus *Cynips*, and, in conjunction with the author's Monograph of *Cynips* published in 1930, all that is known of the genus as a whole.

The Appendices include a list of names preoccupied in *Cynips*, a list of the 70 new species described in this book, a bibliography, a list of type localities of *Cynips*, a key to the species-complexes of *Cynips*, a revised check-list and an index.

NOTES ON THE SPECIES OF *PSILISTUS* STÅL (HEMIPTERA, NABIDAE)

By H. M. Harris, Ames, Iowa.

Communicated by Dr. O. W. Richards, F.R.E.S.

In 1873 Stål described from Borneo a large bright-coloured Nabid to which he gave the name *corallinus* and for which he erected the genus *Psilistus*. Thirty-five years later Reuter called attention to the fact that *Alloeorrhynchus marginalis* Distant, described from Burma in 1903, had many of the characters of *Psilistus* Stål and in several respects seemed to be somewhat intermediate between it and the true *Alloeorrhynchus* of Fieber. Reuter therefore proposed to consider *Psilistus* as of only subgeneric rank, and included in it *corallinus* and *marginalis*. A third species (from Java) was added by Poppius in 1914 and a fourth (from Samar, Philippines) by me in 1930. It now becomes possible to redescribe and place definitely in the subgenus two species that have been more or less lost to taxonomists since the time of their description in 1873 and to make known two heretofore undescribed species. These four species are all from Papua, and I am greatly indebted to Mr. W. E. China, and the authorities of the British Museum (Natural History), to whom the specimens belong, for making them available to me for study.

From the typical subgenus, *Psilistus* is differentiated by the evenly swollen front femora, which are thickly armed within for their entire length with slender spine-like teeth. In the typical subgenus the four anterior femora are suddenly and strongly dilated near the middle and have larger, stouter teeth at the point of dilation.

Alloeorrhynchus (*Psilistus*) *niger* (Walker).

1873. *Prostemma nigra* Walker, *Cat. Hemip. Heter. Brit. Mus.*, **7** : 138.
1896. *Prostemma nigra* Lethierry et Severin, *Cat. Gén. Hémip.*, **3** : 213.
1903. *Alloeorrhynchus niger* Distant, *Ann. Mag. nat. Hist.*, (7) **11** : 253, 254.
1910. *Alloeorrhynchus niger* Bergroth, *Ann. Soc. ent. Belg.*, **54** : 206.
1912. *Prostemma nigra* Reuter, *Ofv. Finska Vet.-Soc. Förh.*, **54** (7) : 21.

Elongate-ovate, strongly depressed, almost flat above, thinly setose. Fuscous- to piceous-black, the head and pronotum deep black, the tarsi fusco-testaceous. Strongly shining, the scutellum, hemelytra (except narrow costal margin along basal half), and the metapleuron dull. Head with basal stricture placed immediately behind eyes, the length from base of first rostral segment to collum much less than width across eyes (19 : 27), vertex broad (11), slightly arched, with a faint impression before each ocellus; tylus very poorly delimited from jugae; gula flat. Eyes large, l : w : d = 12 : 8 : 13, as seen from the side projecting below gula but not above vertex. Ocelli large, placed close to eyes. Antennae relatively short, segments I and II stout, I almost bare, projecting beyond apex of basal rostral segment by about one-fourth its own length, the others rather thickly clothed with short semi-recumbent hairs, III and IV very slender and with some longer fine hairs; proportions, 11 : 3 + 31 : 27 : 25. Rostrum stout, segment I almost porrect, II reaching prosternum, IV pale, slender, tapering; proportions, II : III : IV = 22 : 20 : 16. *Pronotum* with the two lobes of about same height, somewhat convexly rounded in front, truncate behind, with stout, erect setae on the sides, broader than long (♀, 58 : 42), the collar short, rather broadly elliptical; front lobe slightly shorter than diameter of head

across eyes, its sides in front with two or three stout tubercules, its disc with a post-median transverse impression which connects to a longitudinal sulcus that extends back on front half of posterior lobe; the posterior lobe smooth, its sides strongly converging anteriorly. Scutellum bifoveate on disc, its sides swollen and setose, its extreme apex shiny and truncate with swollen angles. Hemelytra unicolorous, strongly constricted opposite apex of scutellum, flat, the outer corial veins obsolete, the inner one stout and margined exteriorly with a row of coarse punctures; clavus with a row of coarse punctures along each side of the strongly developed vein and an obsolete third row along the inner margin. Membrane smoky black, extending well beyond tip of abdomen. Front and intermediate femora incrassate, not strongly dilated at the middle, each armed within with two rows of regularly spaced, stout piceous teeth; the anterior femora nearly four times as long as deep (46 : 12), their tibiae serrately dentate within and strongly widened at apex, the length of the pad equal to that of an eye (12); intermediate tibiae dentate within and with a short apical pad. Prosternum gibbose. Ostiolar canal strongly curved posteriorly. Abdomen widened distally, the connexiva not covered by hemelytra, the venter flattened basally, convex distally, with long setae at the lateral margins of the genital segments.

Length, (♀) 9·5 mm. Width, pronotum, 2·64 mm., abdomen, 3·3 mm.

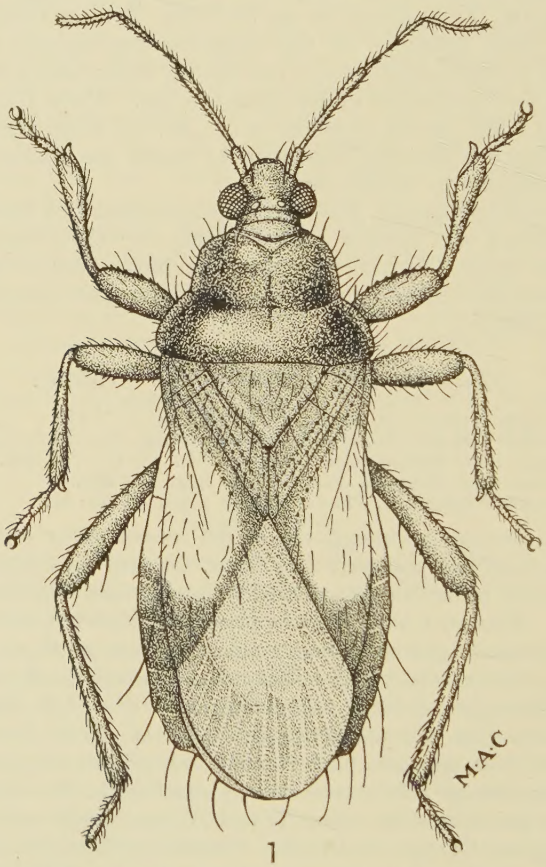

Fig. 1.—*Alloeorrhynchus* (*Psilistus*) *tarsalis* (Walker), female.

Five specimens (four of which are carded) are at hand from Papua : Kokoda, 1200 ft., viii.1933 (*L. E. Cheesman*). These seem unquestionably to belong

to the *Prostemma nigra* of Walker's Catalogue, a species not mentioned in the monograph by Reuter and Poppius.

Alloeorrhynchus (*Psilistus*) *tarsalis* (Walker) (fig. 1).

1873. *Prostemma tarsalis* Walker, *Cat. Hemip. Heter. Brit. Mus.*, **7** : 138.
1896. *Prostemma tarsalis* Lethierry et Severin, *Cat. Gén. Hémip.*, **3** : 213.
1903. *Prostemma tarsalis* Distant, *Ann. Mag. nat. Hist.*, (7) **11** : 255.
1909. *Prostemma tarsalis* Reuter et Poppius, *Acta Soc. Sci. Fenn.*, **37** (2) : 59.

Elongate-ovate, strongly depressed, almost flat above, thinly setose. Deep piceous black, the antennae, rostrum, and tibiae fuscous black, the tarsi fusco-testaceous, an elongate ovate spot on the disc of each hemelytron and the first two connexival segments reddish-orange. Strongly shining, the scutellum and hemelytra, except for narrow costal margin along basal half of corium, dull. Head with the collum occupying entire postocular part, the length from basal stricture to base of first rostral segment much less than width across eyes (13 : 22); vertex broad (9), faintly transversely impressed in front of ocelli; tylus very poorly delimited from jugae; gula flat. Eyes large, as seen from side not projecting above vertex; l : w : d = 9 : 6 : 10. Ocelli wide apart. Antennae short, stout, the distal two segments thinner and with longer hairs; proportions, 7 : 2 + 18 : 16 : 16. Rostrum stout, with first segment very short and almost porrect, II enlarged from the base, just about attaining prosternum, III fusiform, IV paler, very slender and tapering; proportions, II : III : IV = 12 : 12 : 12. *Pronotum* smooth, broader than long (45 : 31), truncate in front and behind, the collar triangular; the front lobe rectangular, much broader than long (31 : 20), with a faint, short, median longitudinal sulcus at the base; posterior lobe evenly arched across its disc. Scutellum bifoveate on the disc, transversely rugose from there toward apex, the latter truncate, shiny; sides swollen and with several long fine semi-erect hairs. Hemelytra flat, not covering connexiva, sparsely clothed with rather stiff, semi-erect hairs, with four rows of coarse punctures (one along inner margin of clavus, one on each side of claval vein and one along costal side of inner corial vein), the costal margin concavely sinuate at basal fourth; the red spot twice as long as wide (30 : 15), narrowest basally, occupying that part of embolium and outer portion of corium from a point opposite apex of scutellum to the distal fourth of embolium. Membrane smoky black, extending beyond apex of abdomen. Legs stout, the anterior and intermediate femora swollen, evenly and thickly dentate within; the anterior ones as seen from the side three times as long as deep (30 : 10), anterior and intermediate tibiae serrately dentate within, with apical pads, the anterior ones strongly developed. Metapleuron dull, rugulose, the canal shiny, obliquely curved posteriorly. Abdomen widened posteriorly, convex beneath.

Length, 6·1 mm. Width, pronotum, 2·0 mm.; abdomen 2·5 mm.

The above description is made from a single, carded female, PAPUA : Kokoda, 1200 ft., vi.1933 (*L. E. Cheesman*); belonging to the British Museum (Natural History). *P. tarsalis* has not previously been recognised since the time of its original description. Even though there are some discrepancies between the specimen before me and the original description, there seems to be little doubt about the true identity of this beautiful *Psilistus*.

Alloeorrhynchus (**Psilistus**) **rubrofasciatus** sp. n. (fig. 2).

Elongate-ovate, depressed, the lateral margins prominently setose, the hemelytra and venter with a rather uniform sparse clothing of almost erect, dark hairs. Piceous black, the antennae and tarsi fusco-testaceous, the basal half of abdomen and a medially-narrowed wide band across distal half of hemelytra (not including membrane and outer apical angle of corium), red. Shiny, the scutellum, hemelytra (except narrow costal margin), and metapleuron dull. Head constricted immediately behind eyes, very faintly transversely

impressed in front of ocelli, broader than long (23 : 19), the tylus very poorly delimited, the gula not swollen. Collum relatively long as in related forms. Vertex wide (11), arched above top of eyes. The latter moderate, not occupying the full depth of head; their proportions, l : w : d = 10 : 6 : 10. Ocelli relatively small, the distance from the eye to each less than its own diameter. Antennae relatively short and stout, segment I surpassing first rostral segment by about one-third its own length, it and II stout, III and IV slender,

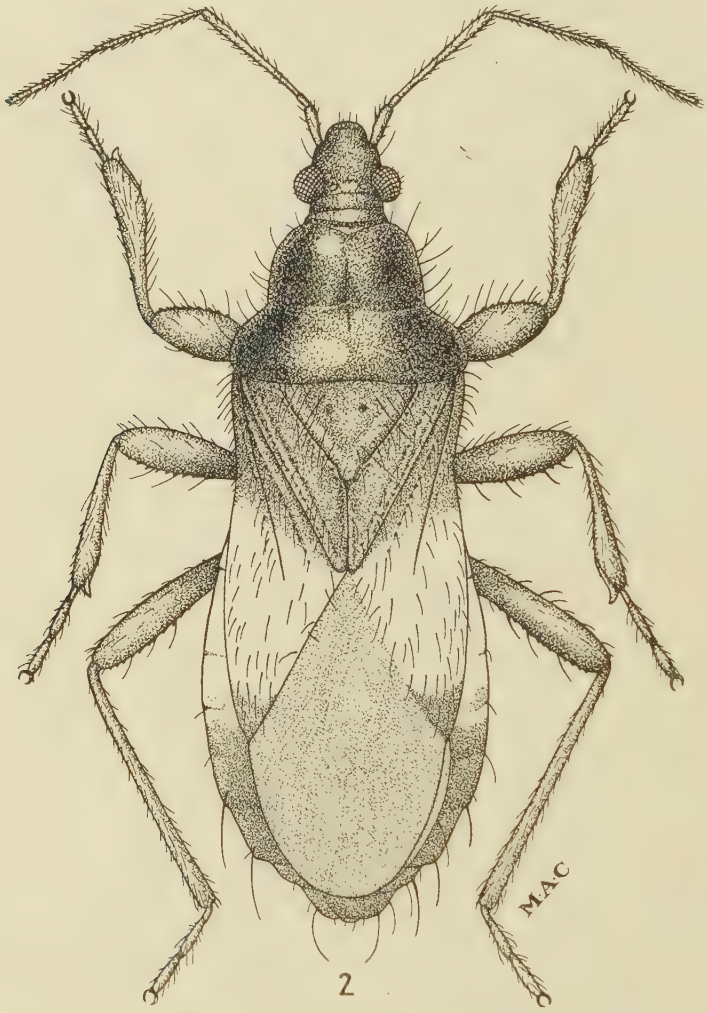

Fig. 2.—*Alloeorrhynchus* (*Psilistus*) *rubrofasciatus* sp. n., female.

all but I thickly clothed with short hairs; proportions, 10 : 3 + 27 : 26 : 25. Rostrum stout, the apical segment pale, slender, tapering; proportions, II : III : IV = 19 : 17 : 16. *Pronotum* broader than long (51 : 40), relatively flat on the disc; the front lobe two-thirds longer than the hind (25 : 15), longitudinally impressed down the middle at the base, the collar not sharply delimited, somewhat triangular, longer than in *tarsalis* (Walker), the sides more obliquely narrowed in front than in that species; posterior lobe slightly convex, its hind margin almost truncate. Scutellum about as in *tarsalis*, the disc more distinctly

rugulose, the apex with lateral angles slightly but distinctly produced. Hemelytra constricted and with four rows of punctures as in *tarsalis* and related species. Connexiva exposed from above. Anterior and intermediate femora and tibiae armed as in *tarsalis* and related forms, the posterior femora with an irregular row of short teeth beneath. Front coxae relatively short and stout, their femora strongly incrassate, about three times as long as deep (37 : 12); the tibiae strongly widened distally, the apical pad very long (12). Intermediate tibiae more strongly swollen distally and with more greatly developed apical pads than in *tarsalis* and related forms. Meso- and meta-sternum finely longitudinally carinate down the middle; their pleura rugose, the ostiolar canal strongly curved posteriorly. Venter slightly convex, flattened and narrowed basally.

Length, (♀) 7·7 mm. Width, pronotum, 2·3 mm.; abdomen, 2·7 mm.

Holotype, female, PAPUA: Mafulu, 4000 ft., xii.1933 (*L. E. Cheesman*) British Museum (Natural History).

Related to *tarsalis* (Walker), but differing from it in the characters of the head, pronotum and legs, as well as in size and colour.

Alloeorrhynchus (Psilistus) chinai sp. n.

Male: Elongate-ovate, smooth, sparsely setose and also pilose; shiny, the scutellum, hemelytra (except costal margin), and metapleura dull. Piceous black, the antennae (except basal segment), and the tibiae and tarsi paler, fuscous black; scutellum and hemelytra velvety black, the latter with a triangular ochraceous patch in the outer apical angle of corium. Head transversely impressed before ocelli, broader than long (30 : 20); vertex wide (12); tylus prominent, raised above jugae. Eyes large, oblique; length : width : depth = 14 : 9 : 16. Ocelli large, placed close to eyes. Collum long, swollen. Antennae long, segment I slightly sinuate, enlarged distally, II stout, of about equal diameter throughout, III and IV fine, all with short hairs; proportions, 23 : 3 + 54 : 42 : 48. Rostrum long, stout, segment I not longer than broad, II reaching on mesosternum, IV fine; proportions, 42 : 27 : 14. *Pronotum* broader than long (67 : 50), rather regularly widened posteriorly, anterior and posterior lobes convex, of about equal length (25), the collar long, ring-like, not sharply delimited, the median transverse impression sinuate and punctate, the fore lobe with a very faint median impression behind; hind lobe slightly impressed within the humeri, its posterior margin straight. Anterior acetabula produced antero-laterally, strongly evident from above. Scutellum depressed and bifoveate on disc, the apical half with a fine median carina, the sides swollen, irregularly nodulose and with a few very long, fine hairs; apex shiny, its angles slightly produced so that it is somewhat bifid. Hemelytra constricted before the middle, the costal margin serrate along basal third; clavus with a few obsolete punctures along inner margin, its vein stout, sharply delimited by two rows of coarse punctures, the inner corial vein paralleled without by a row of fine punctures; membrane barely attaining tip of abdomen, with two large, discal cells. Wing cell with the hamus straight, very long, arising from the connecting vein near its union with the subtended vein. Anterior coxae long. Anterior and intermediate femora rather sharply narrowed before the apex, armed within with two rows of stout, linear teeth, the posterior femora with an irregular row of shorter teeth; the front femur more than five times as long as deep (65 : 12). Front and middle tibiae curved, enlarged distally, dentate within, with apical pads, those of front tibia rather short (7). Tarsi relatively long and slender. Prosternum not prominent. Meso- and meta-sternum sharply carinate down the middle, their pleura strongly rugose. Venter constricted basally, with a faint median ridge on second segment. Connexiva exposed from above. Last genital segment beneath triangular, above terminating in two projecting, angular processes which are separated by a deep median notch. Claspers minute.

Length, 10·5 mm. Width, pronotum 3·0 mm.; abdomen, 3·63 mm.

Female: Similar to male except proportionately larger, the hind margin of the genital segment above with a median notch which is evenly filled by the cauda so that it appears truncate. Genital segments beneath with large prominent ovipositor as in related forms. Head, 34 : 25. Vertex, 14. Eye, 15 : 10 : 15. Pronotum, 80 : 60. Anterior femur, 75 : 14.

Length, 12·7 mm. Width, pronotum, 3·2 mm.; abdomen, 4·3 mm.

Holotype, male, and *allotype*, female, PAPUA: Kokoda, 1200 ft., ix.1933 (*L. E. Cheesman*) British Museum (Natural History). *Paratypes*, two females and two males taken with the types and one female, same locality, vi.1933 (*L. E. Cheesman*) (Brit. Mus. and collection of author).

It is a pleasure to dedicate this species to Mr. W. E. China, through whose courtesy and interest this material was made available for study.

The species differs from the others of the subgenus in its less depressed form, proportions of antennal and rostral segments, more elongate front coxae, and the character of the pronotum and legs as well as in the armature of the terminal segment of the male. It is interesting to note that in all these species the anterior and intermediate femora on each side below are beset with a row of slender setae which in position and arrangement correspond to the stouter ones characteristic of the species of *Arbela* and of certain *Nabis* forms. The first segment of the venter on each side possesses a structure similar to that found in certain *Pagasa* species.

Key to species of Alloeorrhynchus *subgenus* Psilistus *Stål.*

1. Unicolorous black, only the antennae and tarsi paler . . . *niger* (Walker).
   Red, or black with contrasting ochraceous to red markings . . . . . 2.
2. Coral-red, the scutellum, clavus and corium sometimes fuscous *corallinus* (Stål).
   Reddish-brown or piceous . . . . . 3.
3. Markings of hemelytra not reaching inward to median line, thus not forming a distinct transverse band . . . . . 4.
   With a reddish-orange band across posterior half of corium (except outer apical angle). Figure 2 . . . . . *rubrofasciatus* sp. n.
4. Large black species, the outer apical angle of corium pale. Male with genital segment above bi-spinose . . . . . *chinai* sp. n.
   Not as above . . . . . 5.
5. Hind portion of pronotum and side margins of corium reddish-brown, base of abdomen yellow . . . . . *bergrothi* Poppius.
   Not as above . . . . . 6.
6. A small spot near apical margin of corium and another at the outer apical angle ochraceous. Connexivum ochraceous, spotted with piceous *marginalis* Distant.
   With a single large oval orange to reddish patch on hemelytra . . . . 7.
7. Antennal II distinctly longer than width of head through eyes *bakeri* Harris.
   Antennal II slightly less than width of head across eyes (Figure 1) *tarsalis* (Walker).

A NEW GENUS AND SPECIES OF ACRIDIAN FROM SOUTH INDIA AND CEYLON (ORTHOPTERA)

By G. M. Henry, F.R.E.S.

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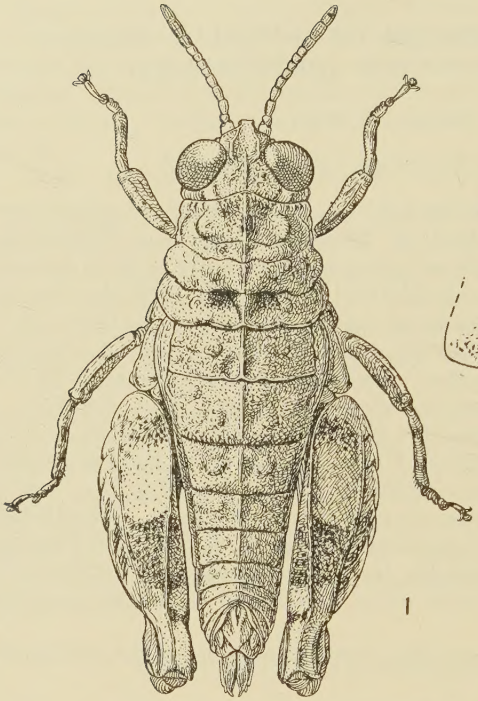
The interesting Acridian described below has been known to me since February 1914, when a specimen was collected at Niroddumunai, near Trincomali, Ceylon. Its description has been deferred owing to uncertainty as to its systematic position. At the British Museum (Natural History) in 1935 the opinion of Dr. B. P. Uvarov was sought on this point, but neither of us was able to reach any definite conclusion as to its affinities beyond the probability that it is related to *Opharus* Bolivar,* from South India, which it somewhat resembles in the structure of the prosternal armature and the hind femur. It is, however, a much rougher insect than *Opharus* and the fastigium is quite different, so that it is clear that the relationship is not very close. Moreover, as Bolivar pointed out (*loc. cit.*), the systematic position of *Opharus* itself is doubtful. In view of this uncertainty I propose to designate the new genus *Dubitacris*. The British Museum possesses specimens of this insect collected by Y. R. Rao and Susainathan in South India in 1921, and these Dr. Uvarov has generously entrusted to me for examination in conjunction with other Indian and Ceylonese material, which is now fairly extensive.

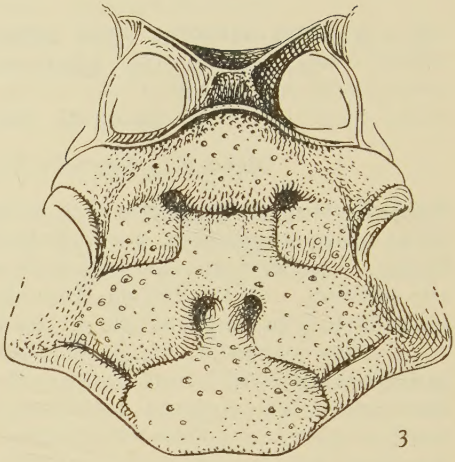
The new genus appears to be a somewhat aberrant member of the sub-family Catantopinae.

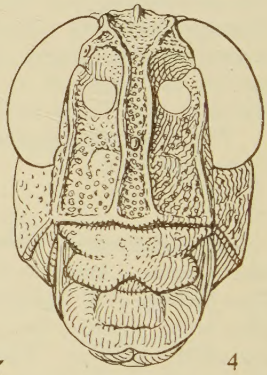
Dubitacris gen. n.

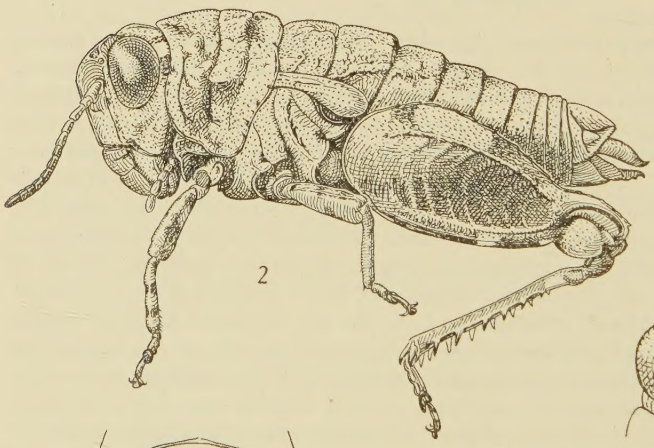
Size rather small. Habitus short and very stout. Body closely punctured and rugose, micropterous. Antennae short, filiform, slightly thickened distally. Face not reclinate. Eyes broadly oval, widely separated dorsally. Frontal ridge sulcate throughout. Fastigium broad, concave, open behind, bounded laterally by sinuated carinae, in front curving into the frontal ridge. Foveoles almost obsolete but represented by some irregular puncturing above the lateral ocelli. A median carina extends throughout the body from just behind the fastigium to the last abdominal tergite. *Pronotum* short, deeper than long, roundedly angulate in front medially, sinuously truncate behind. Median carina cut by two transverse sulci. No lateral carinae but some tuberculate bosses indicate their position. Shape of lateral lobes as shown in fig. 2. *Tegmina* spatula-shaped, reaching margin of first abdominal tergite, closely adpressed, distally expanded to cover the well-developed auditory tympanum; their surface punctured. *Abdomen* short and conical, dorsally very nodulose and punctate, smoother on the sides which are almost vertical and form a rough obtuse angle with the dorsal portion. The postero-dorsal margins of the tergites, especially of the first, are transversely thickened. *Prosternal armature* in form of a broad transverse lamina or collar, shaped in the middle somewhat like the lip of a jug. The mesosternal lobes are separated, in the female, by a space greater than their individual width; in the male by a space about equal to the width of a lobe. The metasternal lobes are rather widely separated in the female, less widely in the male (see fig. 3). *Fore* and *mid legs* without any special features, rather small, their femora rugose and carinate. Hind legs with the femora short but very broad and stout, their external surface highly convex; the genicular lobes short and rounded. Hind tibiae lacking an outer apical spine. *Male genitalia* short and compact. The tenth tergite (retracted in most of the specimens) is of the form shown in

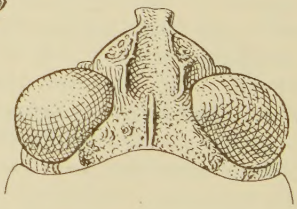
* Bolivar, I., 1918, *Rev. R. Acad. Madrid*, **16** : 408.

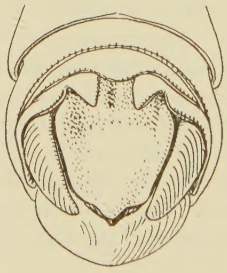


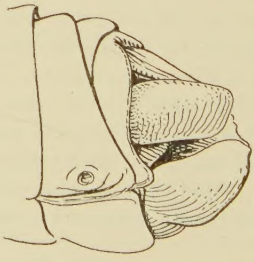












G HENRY

FIGS. 1–7.—*Dubitacris robustus* gen. et sp. n.; 1. ♀, dorsal, × 5; 2. ♀, lateral, × 5; 3. ♀, pro-, meso-, and meta-sterna, × 10; 4. ♀, face, × 10; 5. ♀, head, dorsal, × 10; 6. ♂, genitalia, dorsal, × 20; 7. ♂, genitalia, lateral, × 20.

fig. 6. The supra-anal plate is sub-oval, the cerci are short, broad, laterally compressed, rounded at the tips; subgenital lamina short, semi-globose. *Female supra-anal plate* triangular; cerci short, triangular, somewhat compressed; valves of ovipositor rather short but showing no special features. *Coloration* brown, mottled with black and buff markings. Hind tibiae blue in the only known species.

Genotype : *Dubitacris robustus* sp. n., described below.

Dubitacris robustus sp. n.

Antennae of thirteen or fourteen segments (in many specimens the distal segmental divisions are indistinct or obliterated). *Frontal ridge* with its marginal carinae continuous with those which separate the foveoles from the fastigium; it is slightly widened between the antennal scrobes, slightly narrowed just below the median ocellus and widened again at the clypeal margin; the lateral facial carinae well developed (fig. 4). *Pronotum* as shown in figs. 1 and 2, its surface everywhere coarsely punctate and rugoso-tuberculate; its median carina cut by the second sulcus a little behind the middle. Metanotum and first to fourth abdominal tergites dorsally coarsely rugoso-tuberculate. Mes- and met-episterna closely, the sternal plate more sparsely, punctured. Hind femora with the dorsal carina serrate, the dorsal outer and inner areas closely punctured, the ventral outer area with bands of coarse punctures adjoining its bounding carinae; elsewhere smooth and shining with scattered punctures. Hind tibiae with 5–6 outer, 8 inner, stout spines. *Coloration.* Dark brown, much mottled in an intricate pattern with black and pale brown or buff. A pale stripe, on each side of the occiput, extends from behind the eye to pronotal margin. There is a tendency for a broad pale fascia across the dorso-lateral part of the pronotum, and some pale markings on the lower part of the lateral lobes; on each side of the median carina, just behind the principal sulcus (*i.e.* in the metazona) there is a deep velvety black mark occupying a sunken area. The sternal lobes are buff, varied with black. The abdomen is dark brown on the dorsum, shiny black on the sides, the two colours separated by an indefinite band of buff; the ventrites are buff with broad, mottled black anterior and lateral areas. The hind femora are pale above, proximally, then crossed by a very wide black fascia which extends forwards on the sides almost to the ventral base and includes a pale spot on the outer and inner ventral areas. The inner surface is shiny black with a pale buff spot just proximal to the knee. The knees, with their lobes, are brown. The hind tibiae are greenish-blue with two pale yellowish annulae proximally. These markings are indefinite and are more conspicuous in the males than in the females. *Vestiture.* Both sexes are clothed on the ventral surface and limbs with sparse, pale pubescence; dorsally pubescence is almost absent.

Measurements in mm.

	♂.	♀.
Length	11·2 to 13·0	14·0 to 16·0
Length of antenna	4·0 to 4·6	4·0
Width of head at eyes	2·9 to 3·0	3·0 to 3·75
Length of pronotum	2·75 to 3·0	3·0 to 3·5
Width of pronotum	3·2 to 3·4	4·2 to 4·5
Width of body at metepisternum	4·1 to 4·4	5·1 to 6·0
Length of tegmen	2·0 to 2·2	2·5 to 2·8
Length of hind femur	6·0 to 6·8	7·0 to 8·5
Depth of hind femur (dorso-ventrally)	2·6 to 3·0	3·0 to 3·75

Material examined. CEYLON : 1 ♀, Niroddumunai, near Trincomali, 2.ii.14; 1 ♀, Anuradhapura, 13.xii.16; 1 ♂, 2 ♀♀, Vavuniya, N.P. 16–20.xii.23;

1 ♀, Horawupotana, 15.x.24; 2 ♀♀, Marai Villu, N.W.P. 20.iii.33; 6 ♂♂, 1 ♀, Polonnaruwa, N.C.P. 4–5.vii.35; 3 ♂♂ and 3 ♀♀, Kalawewa, N.C.P. 19–28.i.37.

India: 1 ♂, 1 ♀, Barliyar, Nilgiris, 4.x.21 (Y. R. Rao coll.); 1 ♀, Kallar, 2500 feet, 5.x.21 (Susainathan coll.); 5 ♂♂, 7 ♀♀, Alagar Kovil, Madura District, 19–20.iii.36 (British Museum–Colombo Museum Expedition to S. India, 1936); 5 ♂♂, 3 ♀♀ and several larvae, Burliyar, Nilgiri slopes, 17.iv.37; 4 ♂♂, 1 ♀, Madukarai, Coimbatore District, 19.iv. and 1.v.37; 1 ♀, Sethumadai at the base of Mount Stuart, Anamallai Hills, 25.iv.37; 1 ♂, 1 ♀, Hasanur, Biligiri-rangan Hills, 28–29.iv.37 (British Museum–Colombo Museum Expedition to S. India, 1937).

I can detect no difference between specimens from Ceylon and India. The type (♀ Kalawewa, N.C.P. Ceylon 25.i.37) and a series of paratypes of both sexes from Ceylon and India will be deposited in the British Museum (Natural History).

Ecology, etc. The species is mainly a ground dweller, but I have observed several specimens climbing on shrubs and sticks several feet above the ground. It is remarkably catholic in its choice of habitats, as I found it in damp evergreen forest at Burliyar on the Nilgiri slopes and also among the semi-desert type of thin shrubbery on a small, sun-baked rocky hill at Madukarai near Coimbatore in April 1937. At Alagar Kovil specimens were found on a gravelly plain with scanty herbage. In Ceylon it seems to favour the dry-zone forests, where it lives in well-shaded situations among fallen leaves beside paths, etc. As may be guessed from its powerful hind femora, it is a mighty jumper; it is rather sluggish, however, and the best way to secure specimens is to sweep with a hand net among fallen leaves and low herbage.

I have no observations on its food or breeding.

Book Notice.

Atlas of the Scale Insects of North America (*Series* 1). By G. F. Ferris. 1937. London: (H. Milford), Oxford University Press. Price £2 0*s*.

This work is printed by a process of reproduction resulting in the appearance of a typewritten page very clearly printed. As stated by the author, it is anticipated that the completion of the work may take up to ten years and extend to several "volumes." The "volume" under notice is a unit only for convenience of publication, there being no continuous pagination, but, instead, each species described and figured is accorded a serial number, so that the "volume" contains SI–1 to SI–136. It is felt that this system will best permit of the interpolation of species described during the process of publication of the work, it being estimated that 750 species may have to be included.

To each species two leaves are devoted; the first gives, in the form of a title-page, the name of the species and its subfamily, family and tribe, whilst on the reverse of the "title-page" is the necessary text giving synonymy, hosts and distribution, habit, recognition characters and notes. This is completed by detailed figures of the species. Similar information is given for the genera, including figures, where these are considered useful. Seven new genera and 10 new species are described, and a list of the 136 species included in the volume is given.